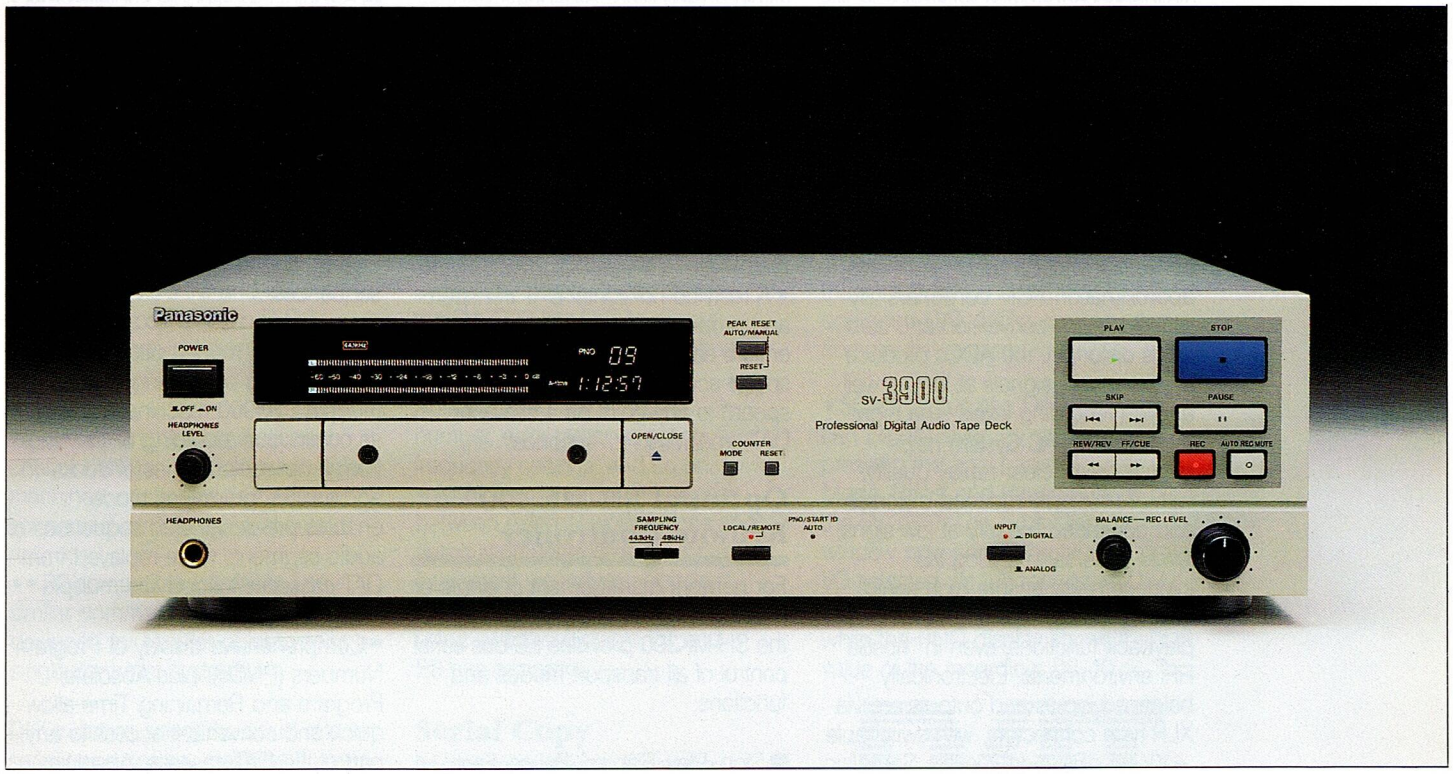
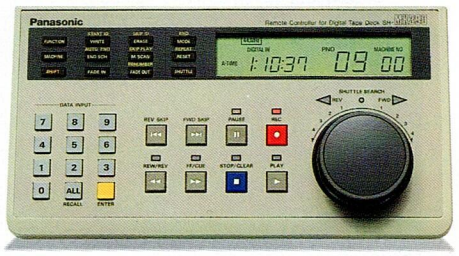
Panasonic®

SV-3900
Digital Audio Tape Deck



A POWERFUL COMBINATION: OUTSTANDING AUDIO QUALITY AND COMPREHENSIVE SERIAL CONTROL

The Panasonic SV-3900 Pro-DAT Recorder provides outstanding record/replay quality and comprehensive serial remote control via industry-standard serial protocols.
Unlike other DAT machines, the SV-3900 is designed specifically for remote control applications, using either the full-featured SH-MK390 Remote Controller (optional), or external computer interfaces. Select simultaneous control of up to 32 individually addressable machines connected on an ES-bus local area network, or single machine/controller combinations using P2 protocols.



Optional Remote Controller: SH-MK390

High-Quality Analog and Digital Conversion

• Instrumentation-quality analog input/output stages.
• One-bit high-precision analog-to-digital converters with 64-times oversampling.
• Advanced 4-DAC System with 18-bit Resolution

These advanced one-bit A-to-Ds with 64-times oversampling anti-aliasing filters offer dramatically improved performance compared to conventional successive approximation PCM converters. By reducing both conversion and zero-cross distortion, the ADCs produce cleaner audio signals at low as well as high recording levels. The high-resolution 4-DAC System helps ensure crystal-clear replay quality, with dramatically reduced distortion and enhanced linearity at low signal levels. A versatile analog I/O interface helps ensure high sonic integrity during routine recording and playback functions, even in "hostile" RFI environments. Electronically balanced inputs and outputs are via XLR-type connectors, with switchable −10/+4 dBu output levels. Sampling rate selection of 44.1 kHz and 48 kHz is available from analog inputs, plus 32, 44.1 and 48 kHz automatically via digital inputs.

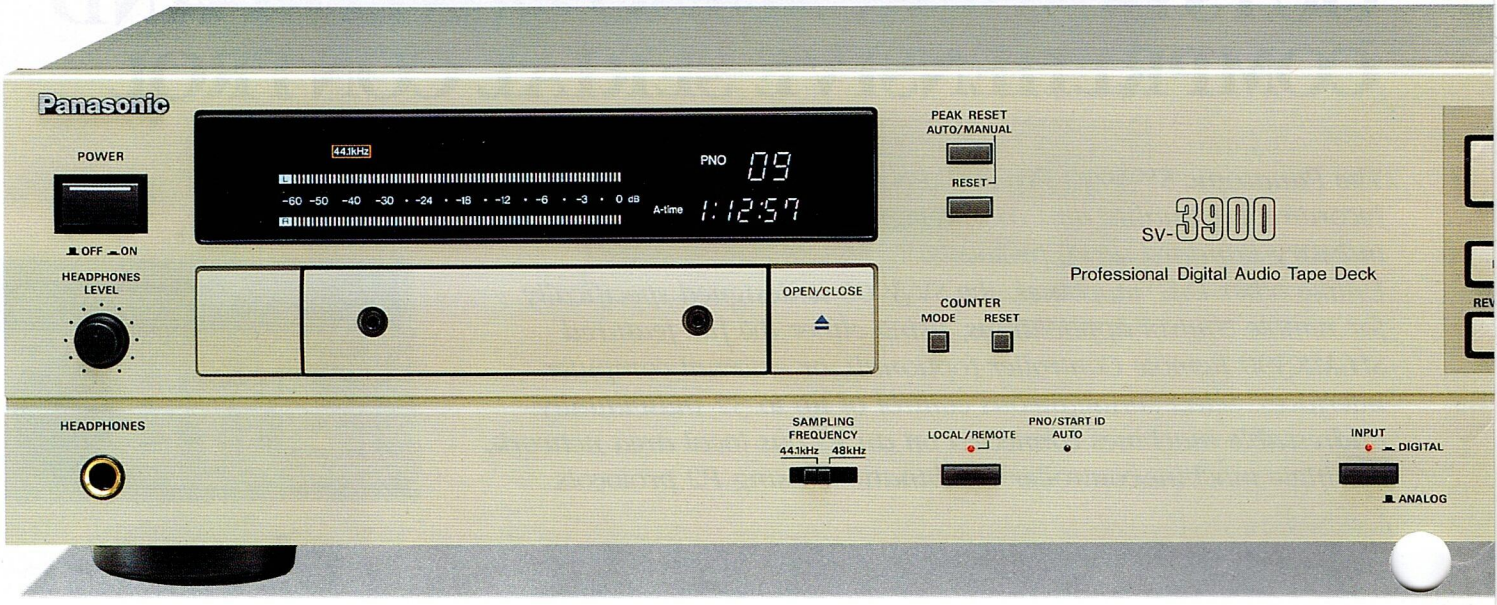
• AES/EBU and IEC 958 Type II digital I/Os provide flexible and convenient direct interface with a wide variety of digital workstations, CD players, mixers, recorders, processors and other components within a recording, broadcast or production facility.
• An error rate display enables fast and convenient readout of head/tape condition — and the possible need for head cleaning — while a rear-panel hour meter displays the cumulative number of operating hours on DAT heads, for preventative maintenance programs.
• A restyled horizontal DAT transport and proprietary head assembly help ensure easy tape loading and high-speed access (up to 400-times play speed) to any point on a two-hour DAT tape within 27 seconds.

Optional SH-MK390 Remote Controller

For network management of single or multiple SV-3900 Pro-DAT machines, the SH-MK390 provides ES-bus serial control of all transport modes and functions:

■ Stop, Play, Record, Pause, Fast Forward, Rewind, FWD-Skip and REV-Skip transport controls.
■ Shuttle wheel with ±0.5, ±1, ±2, and ±3× play speed in Pause mode, plus ±3, ±5, ±7, and ±15x range in Play mode, enables program material to be auditioned at Slow/High speed in forward and reverse directions.
■ Backlit LCD window showing PNO, Counter, Machine ID, Absolute and Program Time information.
■ Dedicated keys for Start/Skip ID Write/Erase, Renumber, Fade In/Out and Shuttle modes.
■ Numeric keypad entry of: machine and system assignments, direct access of PNOs for random-access cueing, and setup of Program Play sequences.

• FUNCTION mode button enables easy dubbing or copying between multiple SV-3900 machines, as well as continuous recording or playback from a networked series of decks. In addition, Program Play mode enables pre-designated sequences of audio segments to be replayed from DAT cassettes loaded into multiple machines.
• Comprehensive display of Program Numbers (PNOs), plus Absolute, Program and Remaining Time allow quick and convenient access to any part of the DAT cassette. Absolute Time and Program Numbers (PNOs) are recorded automatically, or can be added after an audio recording has



been made. Start and Skip IDs can be written, rewritten or erased at any point in the recording, and automatically renumbered. Table of contents (TOC) display of Total Recorded Time and Total PNO count is provided from commercial, pre-recorded DAT cassettes.

ES-Bus and P2 Serial Control Protocols:

For enhanced remote control in recording, broadcast and post-production facilities, the SV-3900 bidirectional serial interface supports industry-standard P2 and ES-bus protocols. A pair of 9-pin D-Sub connectors provide external control of every transport and system function.

•• ES-bus enables sophisticated control between multiple audio/video machines, controllers and editors connected on a serial local area network.
•• P2-compatible interfaces use similar commands to ES-bus, but are designed for simpler point-to-point or single-controller systems.

DIP switches select the baud rate for serial transmission, machine ID (zero through 31) and serial protocol. Standard ES-bus controllers use asynchronous transmit speed of 38.4 kbaud (38,400 bps), with an 8-bit data word, 1 stop bit and even parity. The P2 interface is virtually identical in electrical specifications, apart from using odd parity. (Switch-selectable baud rates enable non-standard interfaces to be used with the conventional set of commands.) ES-bus commands include additional control bytes that select individual machines or groups of machines connected together serially via In and Thru sockets.

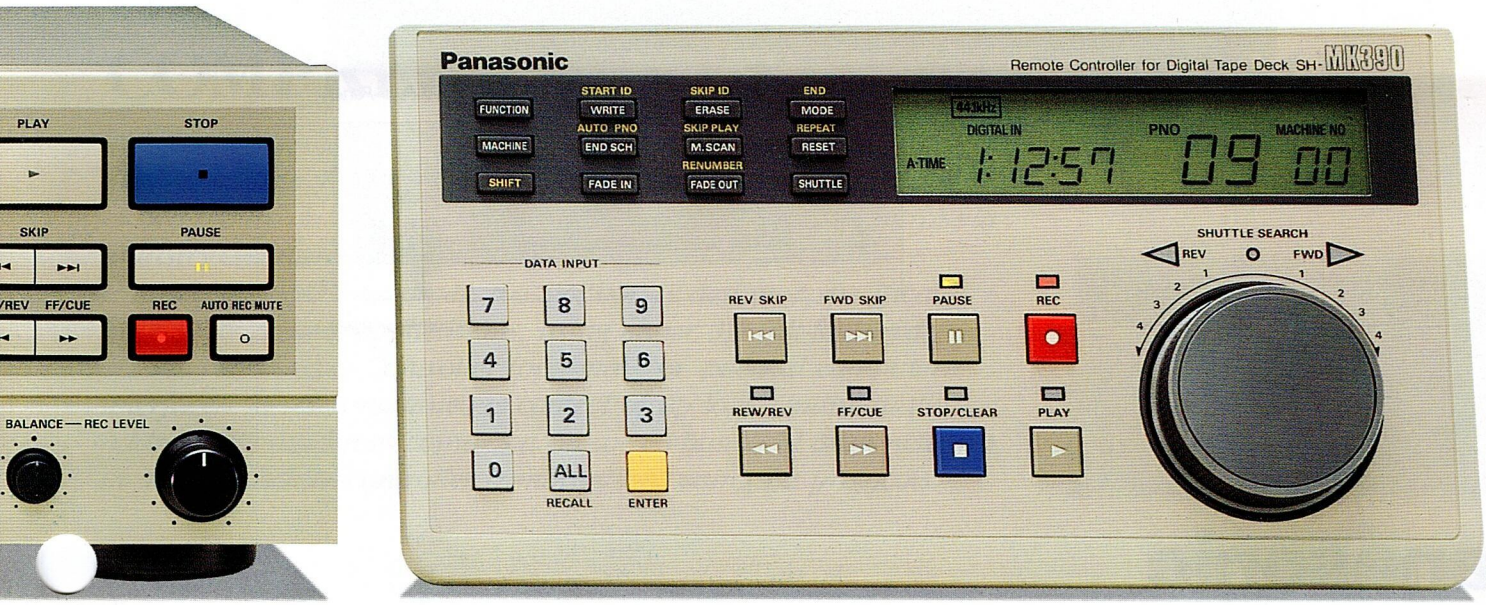
• In addition to the conventional transport and shuttle commands, other control sequences cause the SV-3900 Pro-DAT to output technical and diagnostic information, including PNO locations, Absolute/Program Times, counter number, error rates, sampling frequency settings, and so on.
• All bidirectional communication between external workstations and automation controllers is simple to implement via industry-standard RS-422 interfaces and baud rates, using switch-selectable P2 and ES-bus protocols.

Serial Copy Management System

The SV-3900 Pro-DAT will display the SCMS status of a DAT cassette during playback and recording. Rear-panel DIP switches allow SCMS ID6 status bits to be set during recording via AES/EBU professional digital inputs. (Recordings made via the IEC 958 "consumer-format" I/O will simply copy across the current status of SCMS codes.) To prevent copying of a master DAT tape on a consumer deck, for example, select a switch setting of "ID6 = 10"; selection of "ID6 = 00" would allow any number of digital copies to be made on a consumer DAT. Selection of "ID = 11" will designate a copyright-protected DAT tape that behaves in the same way on consumer SCMS-equipped DAT decks as on a normal commercial release.

• SCMS Status of a DAT recording can be displayed by simultaneously pressing the front-panel Counter Mode, Reset and Pause buttons of the SV-3900. The Time Display window now shows the type of digital I/O selected via the rear-panel DIP switch — AES/EBU or IEC 958 — while the PNO display shows the ID6 value of the recording: 00, 10 or 11.

DAT
Digital Audio Tape



SV-3900 Specifications

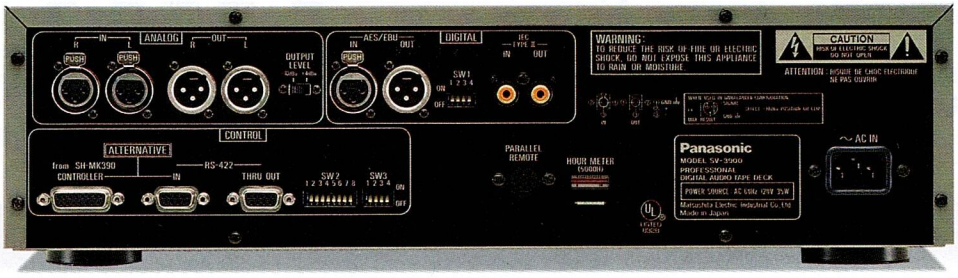
Signal Format	
Recording System	Rotary head type DAT
Sampling Frequency Recording Playback	 48 kHz/44.1 kHz (analog/digital inputs) 32 kHz (digital input only) 48 kHz/44.1 kHz/32 kHz (selected automatically)
Modulation Method	8 — 10 Conversion
Encoding/Decoding	16-bit Linear PCM: two channels
Error Correction	Double Encode Reed-Solomon Code
Transport	
Record/Playback Heads	Amorphous Ferrite-composite type
Cylinder Diameter	30 mm
Cylinder Rotation Speed	2,000 rpm
Tape Speed	8.15 mm/s and 12.225 mm/s (selected automatically)
Track Pitch	13.6 μm
FF/Rewind Time	Approx. 27 seconds for a 2-hour DAT tape
FF/Rewind Speed	Up to 400 times normal playback speed
Search Speed	Up to 250 times normal playback speed
Shuttle Speed	Between 0.5 — 15 times normal playback speed
Audio	
Number of Channels	Two (stereo)
Frequency Response	At 48 kHz sampling freq. 10 Hz to 22 kHz (±0.5 dB) At 44.1 kHz sampling freq. 10 Hz to 20 kHz (±0.5 dB) At 32 kHz sampling freq. 10 Hz to 15 kHz (±0.5 dB)
Signal-to-Noise Ratio	More than 92 dB, DIN weighted (22.4 Hz to 22.4 kHz bandpass)
Total Harmonic Distortion	Less than 0.05% (1 kHz: +4 dBu) Less than 0.007% (1 kHz: +22 dBu)
Crosstalk	Less than 80dB (1 kHz)
Headroom	18 dB
Wow and Flutter	Unmeasurable

Analog Input/Output Characteristics	
Input connector	XLR-3 type
Input Impedance	10 kohms, balanced
Normal Input Level	+4 dBu (−18 dB record level)
Maximum Input Sensitivity	−14 dBu (−18 dB record level)
Maximum Input Level	+26 dBu
Output Connector	XLR-3 type
Actual Output Impedance	75 ohms, balanced
Maximum Load Impedance	600 ohms
Nominal Output Level	+4 dBu/−10 dBu (switch selectable)
Maximum Output Level	+22 dBu
Headphone Connector	TRS phone jack
Maximum Headphone Output	30 mW/32 ohms
AES/EBU Digital Input/Output Characteristics	
Input Connector	XLR-3 type
Input Impedance	100 ohms, balanced
Nominal Input Level	3 — 10 Volts peak
Output Connector	XLR-3 type
Actual Output Impedance	20 ohms, balanced
Maximum Load Impedance	100 ohms
Output Level	5 Vp-p
IEC 958/TYPE-2 "S/PDIF" Digital Input/Output	
Input Connector	RCA phono type (coaxial)
Input Impedance	75 ohms
Nominal Input Level	200 — 500 millivolts peak to peak
Output Connector	RCA phono type (coaxial)
Actual Output Impedance	75 ohms
Maximum Load Impedance	75 ohms
Output Level	500 millivolts peak to peak
Parallel Remote Control Input	
Input Connector	8-Pin DIN
Type	Parallel, connect to ground
Functions Controlled	Play, Stop, Pause, FF, Rew, F-Skip, R-Skip, etc (43 functions)

Serial Remote Control Input	
Input/Output Connector	9-pin D-sub × 2 (Input and through-out) 15-pin D-Sub(for controller SH-MK390 (option)
Type	ES-bus and P-2 protocols (switchable) * Controller SH-MK390 (option) is available for ES-bus mode
Machine Number Setting	Zero through No.31 (available in ES-bus mode)
General	
Power Supply	120V AC, 60Hz
Power Consumption	35W
Dimensions (W × H × D)	16⅞" × 4¾" × 12⅜" (430 × 122 × 315 mm)
Weight	14⅛ lbs (6.4kg)
Included Accessories	AC Power Cord; Rack Mount Kit; Cleaning Tape (RT-RCLP)
Optional Accessories	Parallel Remote Controller, SSE44 Serial Remote Controller, SH-MK390 * Based on ES-bus protocol

SH-MK390 Specifications

Protocol	Based on ES-bus 32 units can be controlled simultaneously
Keys and Knobs	32 keys (Play, Stop, Rec, Pause, FF, Rew, F-skip, R-skip, Ten-Key, etc) shuttle dial
Display	LCD with back light (Program number, Machine ID, A-Time, etc)
Power Supply	12V DC (supplied from SV-3900)
Power Consumption	1.2 W
Connecting Cable	15-Pin D sub connector 19¾ ft (6 m)
Dimensions (W × H × D)	9⅞" × 2" × 5¼" (250 × 51 × 132 mm)
Weight	Approx. 2 lbs (890 g)



SV-3900 Rear Panel

SH-MK390 Rear Panel

Panasonic

Communications & Systems Company

Division of Matsushita Electric Corporation of America
Audio Video Systems Group

Professional Audio Systems: Headquarters
6550 Katella Avenue Cypress, CA 90630 TEL: (714) 373-7277 FAX: (714) 373-7242

Weights and dimensions shown are approximate.
These products may be subject to export control regulations.
Design and specifications are subject to change without notice.

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